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Marine Algae from Long Island

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VI

Following a long-established custom, the writer suggests to his students in courses dealing with algae that when they go off into their various fields of research, every opportunity be taken to secure specimens of algae, particularly marine algae, for study. Most like the idea; few actually arrange to prepare specimens. Those few who do make collections usually get something distinctly worth while, and their success keeps up hope for other occasions. One of the most extensive lots of algae thus brought to the writer's attention was one assembled by Dr. Alfred Perlmutter while in the course of fisheries investigations in Long Island waters. Prepared at considerable inconvenience to himself, this material represents a real contribution to the knowledge of the current Long Island flora, and the writer is very much indebted to Dr. Perlmutter for the opportunity to go over and report upon it here. The chief sets of material will remain in the possession of the collector and the University of Michigan.

Long Island and Long Island Sound seem to support an algal flora intermediate in character between that of more northerly affinities found north of Cape Cod, and the southern flora. The distinction is largely one based on negative evidence: northerly forms are largely lacking, but there are no really tropical types which are known to reach their northern limits in this area. This statement seems to hold true down to the Virginia Capes. One of the interesting features of the recorded flora from our area is the records of sporadic occurrence of distinctly northern forms at scattered stations, presumably representing local cold-water areas. Some of these are of course unrepresented by specimens, and may never be authenticated; others may be based on misidentifications, or errors in labelling. All such forms should be searched for repeatedly to establish their present status in the flora. This paper

adds one authentic record to this small group: *Porphyropsis coccinea*, not previously known from south of New Hampshire. There is no reason, on the basis of the other additions to the Long Island flora, to change our conception of its general character.

Records of Long Island, N. Y., marine algae are not very numerous, nor, for the most part, are the studies particularly thorough or extensive. A very few old local lists, mention in some more general ecological studies, and a few uncritical compilations, make up the bulk of the sources of information. Our earliest records specifically including Long Island algae and those of New York Harbor are those of Durant (1850) and Hooper (1850). Durant's volume, in effect an exsiccata, was prepared in a very small number of copies and not widely circulated; consequently it did little to affect the early study of algae of the area. Hooper rarely gives a more exact record than New York Bay or Long Island Sound, but probably under the latter dealt with some Long Island specimens. Harvey (1852-58), in preparing his *Nereis*, is likewise somewhat vague, and generally by inference refers to mainland stations when mentioning Long Island Sound, but does specifically designate places on the island. Farlow in 1881 mentions certain Long Island stations, and later (1893) a very few others. Pike (1886) is the first to deal in any large way with algae of this area, and his paper gives a long list well furnished with definite locations at which the algae were collected. Jeliffe (1904) offers but two additions. Johnson and York (1912) first gave descriptions of the relation of marine algae to their substrata and to other vegetation on Long Island, a subject also touched by Transeau (1913). Howe, although for many years living near New York and no doubt with occasion to note the algae of Long Island, appears to have published but one paper on them, in which (1914) he gives the occurrence in winter of quite a few species. Burnham and Latham (1914, 1917) give a considerable algal list without, however, many exact localities. Grier (1925) adds several station records, and includes by compilation the earlier ones falling within his territory. Since that time, so far as the writer is informed, there has not been any addition to the published flora of the marine algae of Long Island, although citation of the presence of the various marine species on the island was attempted in the writer's volume on *Marine Algae of the Northeastern Coast*.

The present list adds a few names to the recorded list, and adds considerably to the list of stations at which the various species have been found. Peculiar in its proximity to a great population center, heavily populated on its western end, the island offers special opportunity for observing changes in the algal population with development of the land. The early records of Pike should be systematically confirmed at the nearest practicable points to the original stations. With most of the bays, points and other interesting features of coastal topography easily approached by road, it should be possible to obtain a thorough picture of the flora with relatively little difficulty. Work of a thorough type, rather than scattered records, is needed.

SOURCES OF MATERIAL

The twenty-four stations which were visited for the collections under consideration may be grouped under the following place names. The latitudes and longitudes given are necessarily approximate, but will aid in orientation.

	N. Latitude	W. Longitude
Eastern Long Island Sound, not more exactly identifiable.		
Suffolk County, L. I., N. Y.		
Lake Montauk (on Geol. Surv. maps as Great Pond)	41° 04' 00"	71° 55' 30"
Buoy off Lake Montauk.....	41° 05' 00"	71° 56' 30"
Eastern Plain Point on Gardiners Island..	41° 06' 00"	72° 04' 45"
Gardiners Point Islet outside Gardiners Bay	41° 08' 30"	72° 07' 45"
Center of Gardiners Bay.....	41° 07' 30"	72° 12' 30"
Noyack Bay	41° 01' 00"	72° 21' 00"
Greenport, opposite Shelter Island.....	41° 06' 00"	72° 21' 30"
Hog Neck Bay.....	41° 01' 30"	72° 26' 00"
North Great Peconic Bay.....	40° 57' 00"	72° 30' 00"
Mattituck on Great Peconic Bay.....	40° 58' 45"	72° 31' 00"
Flanders Bay	40° 55' 30"	72° 36' 00"
Tuthill Point on Moriches Bay.....	40° 47' 00"	72° 45' 45"
Bellport on Great South Bay.....	40° 45' 15"	72° 56' 00"
Patchogue on Great South Bay.....	40° 45' 00"	73° 01' 00"
West Sayville on Great South Bay.....	40° 43' 15"	73° 05' 45"
Bayshore on Great South Bay.....	40° 43' 00"	73° 14' 00"
Queens County, L. I., N. Y.		
Far Rockaway	40° 36' 30"	73° 46' 30"
Hammels Station on Jamaica Bay.....	40° 35' 30"	73° 49' 00"
Nassau County, L. I., N. Y.		
Glen Cove	40° 52' 00"	73° 39' 30"

The Suffolk County stations west to, and including, Flanders Bay all lie within ramifications of the great indentation from Block Island Sound which splits the eastern end of Long Island. The other stations in Suffolk County and those in Queens County lie along the south shore or on bays extending inland from it. Glen Cove in Nassau County is on the north shore to the west.

The stations were mostly littoral, or in shallow water generally two or three meters in depth, occasionally to 15 meters, and the algae were taken by hand or with simple tools or nets. However, at a buoy outside Lake Montauk nearly 23 meters depth was reached during a haul with a shrimp trawl, and a number of algae secured. With the same tackle in eastern Long Island Sound a depth of 30 meters was attained.

LIST OF SPECIES *

CHLOROPHYCEAE

*Ulva*ceae

Enteromorpha plumosa Kützing. (Farlow 1881, p. 44 as *Ulva Hopkirkii*). Hog Neck Bay.

Enteromorpha crinita (Roth) J. Agardh. Bayshore on Great South Bay; Hammels Station on Jamaica Bay.

Enteromorpha erecta (Lyngbye) J. Agardh. Glen Cove. Apparently not previously recorded from Long Island.

Enteromorpha clathrata (Roth) J. Agardh. (Farlow 1881, p. 44 as *Ulva clathrata*). Hog Neck Bay; Flanders Bay.

Enteromorpha intestinalis (L.) Link. (Farlow 1881, p. 43 as *Ulva enteromorpha* v. *intestinalis*). Far Rockaway; Hammels Station on Jamaica Bay; Glen Cove.

Enteromorpha intestinalis forma *maxima* J. Agardh. Hammels Station on Jamaica Bay.

Enteromorpha micrococca forma *subsalsa* Kjellman. Glen Cove, 1 May 1938. Apparently this plant has not previously been reported from Long Island.

Enteromorpha Linza (L.) J. Agardh. (Farlow 1881, p. 43 as *Ulva enteromorpha* var. *lanceolata*). Great Peconic Bay; Flanders Bay; Hammels Station on Jamaica Bay; Glen Cove.

* Descriptions of all species, and illustrations of most of them, will be found in: W. R. Taylor, "Marine Algae of the Northeastern Coast of North America."

Ulva Lactuca L. (Farlow 1881, p. 43 as *Ulva Lactuca* var. *Lactuca*). Buoy off Lake Montauk; Lake Montauk; Flanders Bay; Hammels Station on Jamaica Bay.

Ulva Lactuca var. *latissima* (L.) DeCandolle. Gardiners Point Islet outside Gardiners Bay; center of Gardiners Bay; Noyack Bay; Mattituck on Great Peconic Bay; Tuthill Point on Moriches Bay; Bellport, West Sayville and Bayshore on Great South Bay; Far Rockaway; Hammels Station on Jamaica Bay. The plants from Far Rockaway appeared, as mounted, to be so very thin and so closely attached to the mounting paper that they seemed to be Monostromas. Examination of cross-sections immediately showed that this assumption was incorrect, for they had the usual two layers of Ulva. However, the thickness in the middle of the fronds, which were 1–2 dm. broad, ranged as low as 20μ , though in other specimens 28–43 μ , with the cells relatively broad in section as is characteristic of the variety.

Cladophoraceae

Spongomorpha arcta (Dillwyn) Kützing. (Farlow 1881, p. 50 as *Cladophora arcta*). Glen Cove.

Bryopsidaceae

Bryopsis plumosa (Hudson) C. Agardh. Glen Cove.

PHAEOPHYCEAE

Ectocarpaceae

Pylaiella littoralis (L.) Kjellman. (Farlow 1881, p. 73 as *Ectocarpus littoralis*). Glen Cove.

Ectocarpus siliculosus (Dillwyn) Lyngbye. (Farlow 1881, p. 71 as *E. confervoides* var. *siliculosus*). Noyack Bay; Greenport opposite Shelter Island; Hog Neck Bay; Hammels Station on Jamaica Bay.

Ectocarpus granulosus (J. E. Smith) C. Agardh. Far Rockaway; Hammels Station on Jamaica Bay.

Chordariaceae

Aegira Zosteræ (Lyngbye) Fries. (Farlow 1881, p. 86 as *Castagnea Zosteræ*). North Great Peconic Bay.

Elachisteaceae

Elachistea fucicola (Velley) Areschoug. Lake Montauk.

Desmarestiaceae

Acrothrix novae-angliae Taylor (Taylor 1928, p. 577). Noyack Bay, 22 and 27 May 1938 down to 8 meters depth; Hog Neck Bay, 1 June 1938; North Great Peconic Bay, 31 May 1938. Apparently this plant has not previously been reported from Long Island; it was first found in the Buzzards Bay area in 1925. This, then, represents an extension of range. Levring (1937, p. 62) by the finding of forms he considers intermediate in Norway, is inclined to consider that *A. novae-angliae* and *A. gracilis* Kylin are not distinct.

Desmarestia viridis (Müller) Lamouroux. Eastern Long Island Sound; buoy off Lake Montauk; Lake Montauk; Gardiners Point Islet outside Gardiners Bay; center of Gardiners Bay; Noyack Bay; north Great Peconic Bay; Mattituck on Great Peconic Bay; Flanders Bay; Far Rockaway; Glen Cove. From the number of places, and the number of collections near each place, as well as the number of specimens preserved, this appears to have been about the commonest species which attracted the collector's attention.

Desmarestia aculeata (L.) Lamouroux. Eastern Long Island Sound; buoy off Lake Montauk; Mattituck on Great Peconic Bay.

Desmarestia aculeata var. *attenuata* Taylor. (Taylor 1937a, p. 230). Lake Montauk, 23 May 1938; Gardiners Point Islet outside Gardiners Bay. Apparently this variety has not previously been reported from Long Island.

Asperococcaceae

Punctaria latifolia Greville. North Great Peconic Bay; Flanders Bay.

Petalonia Fascia (Müller) Kuntze. (Farlow 1881, p. 62 as *Phyllitis fascia*). Lake Montauk; Glen Cove. The specimens tended to approach the variety in form.

Petalonia Fascia var. *caespitosa* (J. Agardh) Taylor. (Taylor 1937a, p. 230). Far Rockaway.

Scytosiphon Lomentaria (Lyngbye) J. Agardh. Lake Montauk; Flanders Bay; Far Rockaway.

Stilophoraceae

Stilophora rhizoides (Ehrhart) J. Agardh. Noyack Bay; Hog Neck Bay; north Great Peconic Bay.

Dictyosiphonaceae

Dictyosiphon foeniculaceus (Hudson) Greville. Greenport opposite Shelter Island; north Great Peconic Bay; Flanders Bay.

Laminariaceae

Chorda tomentosa Lyngbye. Buoy off Lake Montauk, 17 May 1938; center of Gardiners Bay. Apparently this plant has not previously been reported from Long Island.

Chorda Filum (L.) Lamouroux. Gardiners Point Islet off Gardiners Bay; Noyack Bay; Greenport opposite Shelter Island; Far Rockaway; Hammels Station on Jamaica Bay.

Laminaria Agardhii Kjellman. (Taylor 1937b, p. 190). Buoy off Lake Montauk; Lake Montauk; Eastern Plain Point on Gardiners Island; Gardiners Islet off Gardiners Bay; center of Gardiners Bay; Noyack Bay; Hog Neck Bay; Mattituck on Great Peconic Bay.

Fucaceae

Fucus edentatus De la Pylaie. (Farlow 1881, p. 102 as *F. furcatus*). Buoy off Lake Montauk; Lake Montauk. Apparently this plant has not previously been reported from Long Island.

Fucus spiralis L. (Taylor 1937b, p. 204). Far Rockaway.

Fucus vesiculosus L. Lake Montauk; Hammels Station on Jamaica Bay.

Fucus evanescens C. Agardh. Lake Montauk.

Ascophyllum nodosum (L.) LeJolis. Lake Montauk; Hog Neck Bay; Hammels Station on Jamaica Bay; Glen Cove.

Sargassum Filipendula C. Agardh. (Farlow 1881, p. 103 as *S. vulgare*). Noyack Bay.

RHODOPHYCEAE

Bangiaceae

Porphyropsis coccinea (J. Agardh) Rosenvinge. (Taylor 1937b, p. 219). Eastern Plain Point on Gardiners Island, attached to *Desmarestia aculeata*, growing in 10 meters of water, on the 16th May 1938. This plant has apparently only once been reported from

this country, the earlier record having been from the New Hampshire coast, so that a marked extension of range is indicated.

Porphyra atropurpurea (Olivi) DeToni (Taylor 1937b, p. 220). Glen Cove, 1 May 1938. Apparently this plant has not previously been reported from Long Island.

Porphyra umbilicalis (L.) J. Agardh. (Farlow 1881, p. 111 as *P. laciniata*). Lake Montauk; Glen Cove.

Bonnemaisoniaceae

Asparagopsis hamifera (Hariot) Okamura. (Taylor in Lewis and Taylor 1928, p. 197; 1937b, p. 244). Buoy off Lake Montauk, 17 May 1938. Apparently this plant has not previously been reported from Long Island, but has been known from the Buzzards Bay area since 1927. This represents an extension of range for the species.

Dumontiaceae

Dumontia incrassata (Müller) Lamouroux. (Dunn 1916, p. 271 as *D. filiformis*). Lake Montauk. The writer himself observed this plant in some abundance at Montauk Point, and collected specimens 16 June 1936. This plant has apparently not previously been noted from Long Island, but it was reported from Maine in 1916, and later from James Bay. It is known to occur at various stations between Nova Scotia and Rhode Island.

Corallinaceae

Corallina officinalis L. Lake Montauk.

Solieriaceae

Agardhiella tenera (J. Agardh) Schmitz. (Farlow 1881, p. 159 as *Rhabdonia tenera*). Noyack Bay; Tuthill Point on Moriches Bay; Patchogue, West Sayville and Bayshore on Great South Bay.

Rhodophyllidaceae

Cystoclonium purpureum (Hudson) Batters, var. *cirrhosum* Harvey. Buoy off Lake Montauk; Lake Montauk; Eastern Plain Point on Gardiners Island; Gardiners Point Islet outside Gardiners Bay; center of Gardiners Bay. The writer collected this variety at Montauk Point 16 June 1936. It apparently has not previously been reported from Long Island, though the species is known to occur there.

Gracilariaceae

Gracilaria confervoides (L.) Greville. North Great Peconic Bay.

Gracilaria foliifera (Forsskål) Børgesen. (Farlow 1881, p. 164 as *G. multipartita*).

Gracilaria foliifera var. *angustissima* (Harvey) Taylor. (Farlow 1881, p. 164 as *G. multipartita* var. *angustissima*). West Sayville and Bellport on Great South Bay. The variety apparently has not previously been reported from Long Island.

Phyllophoraceae

Ahnfeltia plicata (Hudson) Fries. Buoy off Lake Montauk; Lake Montauk; Gardiners Point Islet off Gardiners Bay.

Phyllophora membranifolia (Goodenough and Woodward) J. Agardh. Eastern Long Island Sound; Gardiners Point Islet off Gardiners Bay.

Phyllophora Brodaei (Turner) J. Agardh. Lake Montauk; Gardiners Point Islet off Gardiners Bay; Mattituck on Great Peconic Bay.

Gigartinaceae

Chondrus crispus (L.) Stackhouse. Lake Montauk; Gardiners Point Islet off Gardiners Bay; Bayshore on Great South Bay; Glen Cove.

Rhodymeniaceae

Rhodymenia palmata (L.) Greville. Buoy off Lake Montauk; Lake Montauk; Gardiners Point Islet off Gardiners Bay; center of Gardiners Bay; Mattituck on Great Peconic Bay.

Ceramiales

Antithamnion americanum (Harvey) Farlow. (Farlow 1881, p. 123 as *Callithamnion americanum*). Buoy off Lake Montauk; Eastern Plain Point on Gardiners Island; center of Gardiners Bay.

Antithamnion cruciatum (C. Agardh) Nägeli. (Farlow 1881, p. 122 as *Callithamnion cruciatum*). Lake Montauk.

Seirospora Griffithsiana Harvey. (Farlow 1881, p. 129 as *Callithamnion seirosperrnum*). Noyack Bay.

Griffithsia globulifera Harvey. (Farlow 1881, p. 131 as *G. Bornetiana*). Noyack Bay.

Ceramium rubrum (Hudson) C. Agardh. Lake Montauk; Gardiners Point Islet off Gardiners Bay; Hammels Station on Jamaica Bay.

Spyridia filamentosa (Wulfen) Harvey. Hog Neck Bay.

Delesseriaceae

Phycodrys rubens (Hudson) Batters. (Farlow 1881, p. 162 as *Delesseria sinuosa*). Lake Montauk; Eastern Plain Point on Gardiners Island; Gardiners Point Islet off Gardiners Bay; Mattituck on Great Peconic Bay.

Grinnellia americana Harvey. Noyack Bay; Bayshore on Great South Bay.

Dasyaceae

Dasya pedicellata (C. Agardh) C. Agardh. (Farlow 1881, p. 177 as *D. elegans*). Hog Neck Bay; Noyack Bay; north Great Peconic Bay.

Rhodomelaceae

Polysiphonia flexicaulis Harvey. (Farlow 1881, p. 173 as *P. violacea* var. *flexicaulis*). Gardiners Point Islet off Gardiners Bay.

Polysiphonia urceolata (Lightfoot) Greville. Eastern Plain Point on Gardiners Island; Gardiners Point Islet off Gardiners Bay; center of Gardiners Bay; Mattituck on Great Peconic Bay; Far Rockaway; Glen Cove.

Polysiphonia nigra (Hudson) Batters. (Farlow 1881, p. 174 as *P. atrorubescens*). Gardiners Point Islet off Gardiners Bay.

Polysiphonia nigrescens (Hudson) Greville. Buoy off Lake Montauk; Noyack Bay; north Great Peconic Bay; Mattituck on Great Peconic Bay; Flanders Bay.

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